

Current Topics in Theoretical Neuroscience

Winter Semester 2023/2024

This semester's theme:
"Towards Conscious AIs"

Thursday afternoon, 14:00 - 15:30
Room: FIAS room 0.200

Zoom:

<https://us02web.zoom.us/j/81148231579?pwd=cm0xSU5VUWlQV09yWDdadXpBRHlzZz09>

Format: Each week we'll have one paper presentation [P] and one (or more) research presentations [R]. Some research presentations are practice talks for upcoming conferences [R*].

Date	Speakers/Topics
19.10.	scheduling
26.10.	Francisco [R*], Marius [P:Runyan et al.]
02.11.	Marcel [R*], Timothy [R*], Antony [R*]
09.11.	Mitra [R], room change to GSC 0.08
16.11.	Xia [P:Dabney et al.], room change to 0.101
23.11.	Petros [R], Zhengyang [P:Ayzenberg & Behrmann]
30.11.	Philip [P:Pache & van Rossum 2023]
07.12.	Zhengyang [R], Theresa [P: Doerig, A et al.]
15.12. Friday	Xia [R], Arthur [R]
21.12.	Sojeong [R], Antony [P:Halvagal & Zenke]
11.01.	Marius [R], Marcel [P:Tononi,Koch]
19.01. Friday	Philip [R], Petros [P: Malakasis et al.], 15:00
25.01.	Theresa [R], Francisco [P:Muhle-Karbe et al.]
01.02.	Jochen traveling
08.02.	no meeting

Current lab members: Antony, Arthur, Francisco, Hossein, Lara Maria, Marcel, Marius, Markus, Mitra, Petros, Philip, Theresa, Xia, Zhengyang

PhD defense practices:

Paper List:

Ayzenberg, V., & Behrmann, M. (2022, June 16). Development of object recognition. [link](#)

Dabney, W., Kurth-Nelson, Z., Uchida, N., Starkweather, C. K., Hassabis, D., Munos, R., & Botvinick, M. (2020). A distributional code for value in dopamine-based reinforcement learning. *Nature*, 577(7792), 671-675. [link](#)

Doerig, A., Sommers, R. P., Seeliger, K., Richards, B., Ismael, J., Lindsay, G. W., ... & Kietzmann, T. C. (2023). The neuroconnectionist research programme. *Nature Reviews Neuroscience*, 1-20. [link](#)

Halvagal, M. S., & Zenke, F. (2023). The combination of Hebbian and predictive plasticity learns invariant object representations in deep sensory networks. *Nature Neuroscience*, 1-10. [link](#)

Muhle-Karbe, P. S., Sheahan, H., Pezzulo, G., Spiers, H. J., Chien, S., Schuck, N. W., & Summerfield, C. (2023). Goal-seeking compresses neural codes for space in the human hippocampus and orbitofrontal cortex. *Neuron*. [link](#)

Pache, A., & van Rossum, M. C. (2023). Energetically efficient learning in neuronal networks. *Current Opinion in Neurobiology*, 83, 102779. [link](#)

Runyan, C. A., Piasini, E., Panzeri, S., & Harvey, C. D. (2017). Distinct timescales of population coding across cortex. *Nature*, 548(7665), 92-96. [link](#)

Malakasis N, Chavlis S, Poirazi P. Synaptic turnover promotes efficient learning in bio-realistic spiking neural networks. bioRxiv [Preprint]. 2023 May 24:2023.05.22.541722. [link](#)

Tononi, Giulio, and Christof Koch. "Consciousness: here, there and everywhere?." *Philosophical Transactions of the Royal Society B: Biological Sciences* 370.1668 (2015): 20140167. [link](#)